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ABSTRACT

A literature review on evaluation and assessment of undergraduate education is presented as part of the final report of the Arizona Board of Regents' Task Force on Excellence, Efficiency and Competitiveness. It is designed to provide an overview of certain evaluation frameworks that have been used in higher education, present some approaches used in the assessment of quality of undergraduate education, and identify issues of general concern surrounding evaluation. Topics of discussion include evaluation frameworks and approaches to assessing quality; evaluation as professional judgment; evaluation by measurement; evaluation by the assessment of congruence between performance and objectives; goal-free/responsive evaluation; other ways of assessing quality; value-added assessment of quality; resources as indicators of quality; unobtrusive measures of quality; and general considerations, questions, and issues. Questions to be answered prior to establishing evaluation frameworks include why the evaluation is being done, what types of information are needed, what methodologies are required, what sources of information the evaluation will have access to, how much time it will take, what personnel and resources are available, and who is the audience for the results. Contains 40 references. (SM)

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EVALUATION AND ASSESSMENT: A LITERATURE REVIEW (SUMMARY)

MARY J. TALBOTT AND KATHLEEN CHURCH

U.S. DEPARTMENT OF EDUCATION
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PURPOSE

The purpose of this paper is threefold:

(1) to present an overview of some evaluation frameworks that have been used in higher education,

(2) to present some approaches used in the assessment of quality, in reference to undergraduate education, and

(3) to identify issues of general concern that surround evaluation.

DEFINITION OF TERMS

Evaluation: While there are many definitions for evaluation, within the context of quality undergraduate education, two seem particularly appropriate. Worthen and Sanders (1973, p. 19) define evaluation as the "determination of the worth of a thing. It includes obtaining information for use in judging the worth of a program...or objective, or the potential utility of alternative approaches designed to attain specified objectives", Dressel (1976, p. 2) sees evaluation as both "a judgment on the worth or impact of a program, procedure, or individual, and the process whereby that judgment is made". Both definitions suggest that evaluation is considered to be both a JUDGMENT and a PROCESS.

ASSESSMENT

A dictionary definition of measurement is the act of measuring or the process of ascertaining the extent, dimensions, quantity of something especially by comparison with a standard. While the term assessment is often used interchangeably with measurement and evaluation, Anderson, Ball and Murphy (1975) suggest that assessment means more than measurement but has a narrower meaning than evaluation. They view assessment as the PROCESS of gathering the measurements and other subjective impressions and "fashioning them into interpretable form". Evaluation can then be made from the body of data gained through assessment. To be useful in the formulation of evaluations, assessment must be multidimensional.

Mary J. Talbott is a doctoral candidate at the University of Arizona. Her research is centered in higher education with contributory emphasis in management. Her studies and experience range in perspective from development and implementation of staff training programs; equity, accreditation, evaluation and assessment; to curriculum and faculty data analysis.

Kathleen Church is a geneticist with her PhD from UC, Berkeley. After three years of post-doctoral research, she joined the Department of Zoology at ASU in 1969. Honored for both the quality of research and the quality of her teaching, she has received ten research grants, authored more than 40 research articles, and served as Department Chair at ASU and as visiting professor at York and Duke Universities.

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EVALUATION FRAMEWORKS AND APPROACHES TO ASSESSING QUALITY

There is very large body of literature on different theories, models and techniques for evaluation in higher education. Unfortunately, most individuals who are called upon to implement evaluation studies often have little background in evaluation theory or psychometrics. They have neither the time nor expertise to understand the terminology, much less the theoretical basis for a particular evaluation framework. With this problem in mind, Gardner (1977) presented a useful summary of five evaluation frameworks, four of which seem particularly relevant to the process of evaluating undergraduate education. He cogently highlights the characteristics, assumptions, advantages, and disadvantages of each approach (attachment 1). Gardner asserts that the frameworks correspond to different definitions of evaluation and credits Stufflebeam, et al., (1971) with identifying the first three categories. Scriven (1973) is credited with proposing the last category, goal-free/responsive evaluation. Each of the frameworks is briefly summarized below as are several approaches to assessing quality.

EVALUATION AS PROFESSIONAL JUDGMENT

"This approach is based on the assumption that the best judge of worth is an expert in the area of the thing being evaluated" (Gardner, 1977, p. 573). Examples of evaluation by professional judgment include peer evaluation of teaching, promotion and tenure committees, and accreditation teams. The methods used to collect information may vary but may include observation, survey information, interviews, component tests or review of documents. This information is then processed by the evaluator and some final report is issued. Although Gardner states that this type of evaluation is usually based on some form of personal contact between evaluator and the evaluand, one might include reputational studies in this category because the judgments about programs or institutions are made by experts in the academic community.

REPUTATIONAL VIEW

Reputational measures rely on the consensus of experts--faculty members, department chairs, deans etc., to identify the highest-quality programs. The information is often obtained through survey instruments. Reputational studies have been conducted at the graduate level (Hughes, 1925, 1934, Keniston, 1959, Carrter, 1966; Roose & Anderson, 1970), on professional schools (Blau-Margulies, 1973, Carrter 1977), and at the undergraduate level (Astin & Solomon, 1981). Tan (1986) includes a summary of some criticisms of reputational studies. They are as follows:

1. "What is actually measured by these studies is renown or reputation (Dolan, 1976; Lawrence & Green, 1980).

2. Bias is likely to occur if the raters are graduates of the program they are rating (Webster, 1981; Carrter, 1966; Lawrence & Green, 1980).

3. A program can be judged to be better in reputation than another only when they are compared on a relative scale (Tan, 1986).

4. Reputational studies have focused mostly on graduate programs in

the top 15-20 institutions in the country. Almost no information is available on teachers' colleges, secondary state universities, women's colleges, or predominantly black colleges (Petrowski et al., 1973; Conrad and Blackburn, 1985a).

5. Reputational studies have been criticized for establishing a pecking order among institutions of higher education (Lawrence & Green, 1980, Roose & Anderson, 1970).

6. Some studies have been criticized for not considering the institutional environment which can affect ratings (Astin & Solmon, 1981).

7. Additionally, some scholars argue that the reputational rankings do not reflect the current status and practice of departments because the rankings are based on past data and impressions (Lawrence & Green, 1980; Cox and Catt, 1977).

8. Astin (1982) has concluded that reputation as determined by reputational surveys is strongly correlated to three factors--SAT scores of entering freshmen, enrollment size, and size of the graduate faculty. It strains logic to automatically connect any of the three factors to quality undergraduate programs. As Astin states, Quality in this view, is whatever people think it is" (Astin, 1985. p. 25).

Despite the above criticisms, reputational studies have been informative about programs at the doctoral level (Tan, 1986). With methodological refinements, the use of multiple criteria, the use of normative standards of quality, and a focus on a wider range of institutions, reputational studies could be useful at the undergraduate, graduate and professional levels (Conrad & Blackburn 1985a).

EVALUATION BY MEASUREMENT

"To evaluate means to measure results, effects, or performance using some type of formalized instrument which produces data that can be compared to some sort of standardized scale" (Gardner, 1977, p. 578). Examples of this type of measurement are the use of SAT or GRE scores, attitude surveys, student evaluation of teaching questionnaires, etc. Significant assumptions are that the phenomena to be evaluated have measurable attributes, that there are instruments which can measure them and that there are standards for comparison.

Gardner (1977, pp. 578-9) stated that "The continuing debate over measurement of outcomes of higher education is a conspicuous example of the controversy which has resulted, at least in part, from attempts at applying this type of evaluation technique in the field of higher education." Notwithstanding this controversy, the measurement of outcomes has received a great deal of attention. Astin (1985) identifies the outcomes approach as one of the traditional views of assessing quality.

OUTCOMES MEASURES

The outcomes approach proposes that the ultimate measure of an institution's quality is in the quality of the product it produces. The quality of the product has

been measured in a variety of ways, including, the proportion of fellowship winners (Knapp and Greenbaum, 1953), the lifetime earnings of alumni (Solmon, 1975), and the number of alumni who earned doctorate degrees (Knapp & Goodrich, 1952). Astin (1982) has criticized this form of approach to assessing quality because it is highly correlated to reputational measures. Further, Astin (1969) states that there is evidence to support the notion that most outcomes measures depend far more on the quality of students admitted than on the quality of the program or institution.

Ewell (1985) has reviewed the different type of student outcomes that can be measured. First, he distinguishes between cognitive gains (gains in knowledge) and changes in attitude. Second, he distinguished between changes occurring inside the student's head versus changes that can be observed. The final distinction made is between changes that occur while the student is in college versus changes that occur after college. Further, Ewell emphasizes the need to design an outcomes study based on the mission of the institution and the problems faced by the institution. Harris (1985) discusses various types of outcomes measures.

EVALUATION BY THE ASSESSMENT OF CONGRUENCE BETWEEN PERFORMANCE AND OBJECTIVES

"...evaluation as the process of specifying or identifying goals, objectives, or standards of performance; identifying or developing the tools to measure performance; and comparing the measurement data collected with the objectives or standards to determine the degree of discrepancy or congruence which exists" (Gardner, 1977, p. 580). The assumption made for this type of evaluation is that the most important decisions about the evaluand are contingent upon their performance in relation to the criteria established for judging the success or failure in attaining the objectives. Solomon (1981) stressed the importance of evaluating the stated goals or objectives in addition to the degree to which the goals are being attained. The generalized approach includes the seven elements listed below (Gardner, 1977, p. 580).

1. identification of goals or objectives for the thing to be evaluated
2. clarification of the variables which affect performance
3. identification of the criteria by which performance will be judged
4. development of tools, techniques, and procedures for collecting information regarding performance
5. collection of performance data
6. comparison of information regarding performance with the pre-established standards
7. communication of results to the appropriate audiences

A timely and specific example of evaluation as the congruence between performance and objective might be the "rising junior" examination. The goal in this case, is that a certain basic skill level must be achieved by a student prior to the undertaking of upper-division coursework. The most important and yet the most difficult aspects of the evaluation would be to clarify the variables that might affect performance and to identify the criteria by which performance will be judged. The power

of the framework is that the data produced may have a "formative" and/or a "summative" role. The data collected can be used to improve the process in those cases where the overall goal is not reached (formative) and/or a decision is made about an individual student (summative). He or she may be excluded from upper division work. Harris (1985) discusses the art of writing institutional goals and the existing instruments for assessing basic skills, general education, major fields, and attitudes and behaviors.

GOAL-FREE/RESPONSIVE EVALUATION

"The central theme of this approach is the critical examination of the institution, project program, or thing, irrespective of its goals. In other words, the intent of goal-free evaluation (GFE) is to discover and judge actual effects without regard to what the effects were supposed to be." (Gardner, 1977, p. 583). The "goal-free" framework is especially useful when judging undergraduate programs in art, music or in other situations where a more holistic approach is required. A major strength of this evaluation framework is that the effort may produce valuable information if it is unencumbered by a lengthy list of goals. For example, the College-Level Academic Skills Test (CLAST) was developed as a part of educational reforms in the State of Florida (Ciereszko, 1987). All students are examined and must pass the test prior to progression to upper division instruction. A major goal of the examination was to increase the basic skills level of the young people of Florida. A side effect has been shown by a goal-free examination of data: fewer minorities have sat for the examination each year that it has been in place. Within a span of three years, there has been a 43 and 35 percent decline in Black and Hispanic test takers respectively (McCabe, 1987).

OTHER WAYS OF ASSESSING QUALITY

Several examples of assessing quality have been presented within the context of the evaluation frameworks. Whatever the evaluation framework(s) with which an institution chooses to work, the assessment of quality is a necessary component for the evaluation or judgment to be rendered. What follows are some additional forms of assessment that have been used or are proposed for use in the evaluation of quality undergraduate education.

VALUE-ADDED ASSESSMENT OF QUALITY

Value-added assessment examines actual and inferred changes in student's performance over time. Students are assessed for competencies upon entering an institution and are then reassessed upon completion of some educational experience (McMillian, 1986). The process attempts to arrive at the "net effects" of the college experience. Astin (1985, p.12) argues that "talent development" should be the goal of the institution and the institution should be judged on the size of positive net effects it has had on both students and faculty.

There is much debate in the literature on the value of "value-added" forms of assessment. Fincher (1985 cf. Pascarella, 1987) argues that problems center on: "(1) the development of reliable and valid instruments to measure various educational outcomes, 2) psychometric problems in assessing change, and 3) conceptual problems in interpreting college effects on

achievement when most of the variation in achievement may be due to student aptitude, prior achievement and the ability of the student's learning effort rather than to instructional variables."

The assessment process involved can be expensive and time consuming. Nevertheless, a number of commercially prepared instruments exist that can be used for testing students upon entering the institutions and again after completing a course of study (see Harris, 1985). It should be emphasized that this approach to assessing quality, like other approaches, is multi-dimensional and can not be adequately addressed by a single indicator or instrument.

RESOURCES AS INDICATORS OF QUALITY

Astin (1985) and Tan (1986) have summarized the types of resources that have been used as indicators of quality including faculty, students, physical facilities and money. For example, Brown (1967) used a composite rating to rank order 1,121 institutions.

The eight variables that made up the composite score were:

(1) the proportion of faculty with the doctorate,

(2) the average salary and fringe compensation of faculty,

(3) the proportion of students continuing to graduate school,

(4) the proportion of graduate students,

(5) the number of volumes in the library per full-time student,

(6) the total number of full-time faculty,

(7) the faculty-student ratio, and

(8) the total expenditure per student.

Tan (1986) indicates a major problem with the above approach is in selecting the right combination of variables in the absence of a theory of quality.

Astin (1985, p. 43) has criticized the resource approach to the assessment of quality: "The symbiotic relationship between the reputational and resource views of excellence should also be borne in mind. That is, college faculties and administrators realize that recruiting more nationally visible faculty scholars and more National Merit Scholars and other highly able students will enhance the reputation of their institution. At the same time, an institution that can strengthen its reputation probably improves its ability to attract faculty members, students, and money. This close interplay between reputation and resources explains why measures based on the two conceptions are so strongly correlated." Other criticisms of the approach were summarized by Tan (1986, p. 252).

- Most studies have used faculty research productivity as the only measure of quality; therefore, faculty quality has been equated with program quality. Critics of this approach argue that faculty quality is not necessarily the same thing as program quality (Smith and Fiedler 1971; Liu, 1978).
- Many studies include only highly visible institutions in the sample (Conrad and Blackburn, 1985a).
- The studies have not come up

with a consistent set of objective measures that can be used to assess quality at a variety of institutions (ibid).

- These studies have failed to use multiple variables to assess quality.

UNOBTRUSIVE MEASURES OF QUALITY

Terenzini (1986) has argued that unobtrusive measures (see Bochner, 1979) should be included in any assessment of quality education.

Three categories of measurements are suggested:

(1) archives and records,

(2) observation, and

(3) physical traces.

For example, something important about student attitudes toward knowledge could be gained by examining records of student participation in student organizations that have specific academic purposes (e.g. Literary Club) as compared to organizations that have athletic or entertainment purposes. A sense of social responsibility might be gleaned by determining the number of students who are registered to vote. Analysis of transcripts, student retention rates, etc., may present meaningful pieces of data. Studies have been undertaken to examine student attitudes toward different races by observing seating behavior in dining rooms of residence halls (Campbell, Kruskan and Wallace, 1966). Finally, Ciardi (1970; cf Terenzini, 1986) suggested that the content of graffiti (an example of a physical trace) reflects the intellectual tenor of the campus. Terenzini (1986) presents ideas about how an institution might systematically use unobtrusive measures to examine quality components of organizations.

GENERAL CONSIDERATIONS, QUESTIONS, AND ISSUES

Questions, concerns, and issues frequently surround evaluation regardless of the specific method used to accomplish the evaluation. Many scholars have included discussions on such topics as the objectives, purposes, stakeholders, the kinds of information to be collected, and the costs. Cranton and Legge (1978, pp. 465-7) have summarized many concerns about both the process of evaluation and programs that are to be evaluated. Questions which should be answered prior to establishing evaluation frameworks are:

- Why is the evaluation being done? What will be done with the evaluation results? Will the results be used in a formative or summative manner? (If the evaluation has several purposes, do the purposes conflict?)

- What types of information are needed for the evaluation?

- What methodologies are required?

- What sources of information will the evaluation have access to?

- How much time will the evaluation take? What decisions need to be made? Are reports required, and if so, when? Who will get the reports?

- What personnel and resources are available to conduct the evaluation? Is the responsibility for the evaluation internal or external? (The external evaluator may be more objective, but the internal evaluator may know the programs and the institution more thoroughly.)

- Who is the audience for the evaluation results? And how will the results be presented?

With respect to the program to be evaluated, the following questions were posed by Cranton and Legge (1978).

- What are the program goals and objectives?

- How do each of the courses in the program work to meet these program goals?

- What teaching methods are currently under way?

- What innovations or projects are currently underway?

- How many students are usually involved in the program? Are there any characteristics of the students that are predictable, in terms of their academic background, the knowledge they have upon entering the program?

- Are there characteristics of the community setting that determine any aspects of the program?

- Are there any characteristics of the educational institution that influence the program?

- What events in the development of the program have influenced its nature?

The latter set of questions may be particularly helpful in reviewing strategies that are designed by individual institutions to assess the quality of undergraduate education. This list of questions is by no means exhaustive, but it highlights some of the issues that will emerge during the evaluation process.

SUMMARY

As the Task Force and its Staff seek, within a relatively short time and with limited resources, to evaluate the quality of undergraduate education, the complexity of the task becomes increasingly obvious. The preceding review provides a framework within which the specific processes to be used can be classified and pitfalls avoided. The approved work plan focuses on critical elements in the categories of: measurement of outcomes and attitudes, evaluation of process, evaluation by professional judgment by the use of consultants, and the impact of the evaluative processes currently in place on student and faculty behavior.

BIBLIOGRAPHY

Anderson, S.B., Ball, S., Murphy, R.T. & Associates.
Encyclopedia of Educa-tional Evaluation. San Francisco: Jossey Bass publishers, 1975.

Astin, A.W. & Solmon, L.C.
"Are reputational ratings needed to measure quality?" Change, 13 (October) 1981: pp. 14-19.

Astin, A.W.
"Why not try some new ways of measuring quality?" Educational Record Spring 1982, pp. 10-15.

Astin, A.W.
Achieving Educational Excellence San Francisco: Jossey Bass Publishers, 1985.

Blau, P.M. & Margulies, R.Z.
"The reputations of American Professional schools." Change 6 (Winter) 1974: 42-47.

Bochner, S.
"Designing Unobtrussive Field Experiments in Social Psychology".In Unobtrussive Measurement Today, New Directions for Methodology of Behavioral Science, L. Sechrest (ed.) San Francisco: Jossey Bass,1979.

Brown, D.G.
The Mobile Professors. Washington, D.C.: The American Council on Education, 1967.

Campbell, D.T. Krusbal, W.H. and Wallace, W.P.
"Seating Aggregation as an Index of Attitude" Sociometry 29, pp. 1-15, 1966.

Carrter, A.M.
An Assessment of Quality in Graduate Education. Washington, D.C.: The American Council on Education, 1966.

Carrter, A.M. & Solmon, L.C.
"The Carrter report on the leading schools of education, law, and business." Change 9 (1977): 44-48.

Ciardi, J.
"Graffiti" Saturday Review 53, May 16, 1970.

Ciereszko, A.A.
"Mandated Testing in Florida: A Faculty Perspective" In Student Outcomes Assessment: What Institutions Stand to Gain SanFrancisco: Jossey: Bass Inc. pp. 67-73, 1987.

Conrad, C.F. & Blackburn, R.T.
"Program quality in higher education: A review and critique of literature and research." In Higher Education:Handbook of Theory and Research, Vol 1, pp. 283-308. New York:Agathon Press, 1985a.

Cox, W.M. & Catt, V.
"Productivity ratings of graduate programs in psychology based on publication in journals of the American Psychological Association." American Psychologist 32: 793-813, 1977.

Cranton, P.A. & Legge, L.H.
"Program evaluation in higher education." Journal of Higher Education, 1978, Vol. 49, No. 5, pp. 464-471.

Dolan, W.P.
The Ranking Game: The Power of Academic Elite. Lincoln, Neb: The University of Nebraska Printing and Duplicating Service.

Dressel, P.L.
Handbook of academic evaluation. San Francisco: Jossey Bass Publishers, 1976.

Ewell, P.T.
Editor's Note. In New Directions for Institutional Research, No. 47, September 1985.

Gardner, D.
"Five evaluation frameworks: Implications for decision making in higher education." Journal of Higher Education, Vol. XLVIII, No. 5, September/October 1977, pp.

571-593.

Harris, J.
Assessing Outcomes in Higher Education: Practical Suggestions For Getting Started. Prepared for the American Association of Higher Education under contract to the National Institute of Education, 1985.

Hughes, R.M.
A study of Graduate Schools of America. Oxford, Ohio: The Miami University Press, 1925.

Hughes, R.M.
"Report of the committee on graduate instruction." Educational Record, 15 (1934): 192-234.

Keniston, H.
Graduate Study in Research in the Arts and Sciences at the University of Pennsylvania. Philadelphia: The University of Pennsylvania Press, 1959.

Knapp, R.H. & Greenbaum, J.J.
The Younger American Scholar: His Collegiate Origins. Chicago: The University of Chicago Press, 1953.

Knapp, R.H. & Goodrich, H.B.
Origins of American Scientists. New York: Russell and Russell, 1952.

Lawrence, J.K. & Green, K.C.
A Question of Quality: The Higher Education Ratings Game. AAHE-ERIC/Higher Education Research Report No. 5.Washington, D.C.: American Association of Higher Education, 1980.

Liu, H.C.
"Faculty citation and quality of graduate engineering departments." Engineering Education 68 (April): 739-741, 1978.

McCabe R.H.
"The Florida College Level Academic Skills Program: A Crisis on the Horizon" Miami, Fla.: Miami Dade Community College. 1987.

Pascarella, E.T.
"Are Value Added Analyses Valuable?" In Addressing the Outcomes of Higher Education, Proceedings of the 1986, Invitational Conference pp. 91, 1986.

Petrowski, W.R., Brown, E.L. and Duffy, J.A.
"National universities and the ACE ratings." Journal of Higher Education, 44 (October) 1973: 496-513.

Roose, K.D. & Anderson, C.J.
A Rating of Graduate Programs. Washington, D.C.: The American Council on Education, 1970.

Scriven, M.
"Goal free evaluation." In School Evaluation: THe Politics and Process, edited by Ernest R. House. Berkeley, Calif.: McCutchan Publishing Corp., 1973.

Smith, R. & Fiedler, F.E.
"The measurement of scholarly work: a critical review of the literature." Educational Record 52 (summer): 225-232,1971.

Solomon, L.C. "The definition of college quality and its impact on earnings." Explorations in Economic Research, Fall 1975.

Solomon, L.C.
"A multidimensional approach to quality." In Quality Higher Education's Prinicpal Challenge, edited by T.M. Stauffer, Washington,D.C.: American Council on Education, 1981.

Stufflebeam, D.L., et al.
Educational valuation and Decision Making.Itasca, Ill.: F.E. Peacock Publishers, 1971.

Tan, D.
"The assessment of quality in higher education: A critical review of the literature and research." Research in Higher Education, 24, (3), 1986, pp. 223-265.

Terenzini, P.T.
"The Case for Unobtrusive Measures" In Assessing the Outcomes of Higher Education, Proceedings of the 1986 ETS Invitational Conference pp. 47-61, 1986.

Webster, D.S.
"Methods of assessing quality." Change (October) 1981: 20-24.

Worthern, B.R. & Sanders, J.R. Educational Evaluation: Theory and Practice.Worthington, Ohio: Charles A. Jones Publishing Company, 1973.